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PATENT APPLICATION
Mo-5663
LeA 33,915

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)
REINHOLD KLIPPER ET AL) GROUP NO.: 1713
SERIAL NUMBER: 09/643,194) EXAMINER: FRED ZITOMER
FILED: AUGUST 21, 2000)
TITLE: PROCESS FOR PREPARING)
MONODISPERSE ANION)
EXCHANGERS)

LETTER

U.S. Patent and Trademark Office
Arlington, VA 22202

Sir:

Enclosed herewith are three copies of an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, \$320.00, to our Deposit Account Number 50-2527.

Respectfully submitted,

By

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Sara Sue Riley 22202

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PATENT APPLICATION
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#14
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)	
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SERIAL NUMBER: 09/643,194)	EXAMINER: FRED ZITOMER
FILED: AUGUST 21, 2000)	
TITLE: PROCESS FOR PREPARING)	
MONODISPERSE ANION)	
EXCHANGERS)	

APPEAL BRIEF

U.S. Patent and Trademark Office
Arlington, VA 22202

Sir:

This Brief, submitted in triplicate, is an appeal from the Final Office Action of the Examiner dated December 10, 2002 in which rejection of Claims 1-15 was maintained.

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Sara Sue Riley
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Sara Sue Riley
Signature of person mailing paper or fee)



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I. REAL PARTY IN INTEREST

The real party in interest for the present appeal is the assignee Bayer AG.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of other appeals or interferences that will directly affect or be directly affected by or having a bearing on the present appeal.

III. STATUS OF CLAIMS

The above-referenced application was filed with Claims 1-24 of which Claims 1-15 are pending but stand rejected.

Claims 16-24 were withdrawn from the application pursuant to a restriction requirement.

Claims 1 -15 are pending but stand rejected. Claims 1- 15 are the subject claims of this appeal.

IV. STATUS OF AMENDMENTS

Appellants filed a response dated September 16, 2002, in order to submit a Declaration under 37 CFR 1.132, in order to advance the claims to allowance without further amendments.

V. SUMMARY OF THE INVENTION

The present invention provides a process for preparing monodisperse anion exchangers comprising

- (a) reacting monomer droplets made from at least one monovinylaromatic compound and at least one polyvinylaromatic compound, and, if desired, a porogen and/or, if desired, an initiator or an initiator combination to give a monodisperse, crosslinked bead polymer,
- (b) amidomethylating the monodisperse, crosslinked bead polymer from step (a) with phthalimide derivatives,

- (c) converting the amidomethylated bead polymer from step (b) to an aminomethylated bead polymer, and
- (d) alkylating the aminomethylated bead polymer from step (c).

The present invention also provides the amidomethylated bead polymers from process step (b), the aminomethylated products from process step (c), and the aminomethylated bead polymers obtained by alkylation in process step (d) and used in anion exchangers. (See page 2, lines 5-21 of Application.)

VI. ISSUES

Issue 1

Whether, in the determination of obviousness under 35 USC 103(a), the Examiner erred in failing to make a finding as to difference between the prior art and the claims.

Issue 2

Whether, in the determination of obviousness under 35 USC 103(a), Examiner erred in concluding that the claims are obvious merely because the claims allegedly recite a compilation of generally known steps.

Issue 3

Whether, in the determination of obviousness under 35 USC 103(a), the Examiner erred in discounting Appellants' rebuttal evidence of unexpected results of monodisperse polymers over referenced heterodisperse polymers, where the Examiner merely restated the previous stated basis for rejection.

VII. GROUPING OF CLAIMS

Claims 1-15 are appealed together.

VIII. ARGUMENTS

It is well established in the law that in the determination of obviousness, the Examiner must make the following findings. The Examiner must ascertain the scope and content of the prior art to which the invention pertains. Then the Examiner must determine the difference between the prior art and the claims and the level of ordinary skill in the art, and evaluating evidence of secondary considerations, Graham v. John Deer Co 383 U.S. 1, 148 USPQ 459 (1966).

In this case, the Examiner failed to make a finding of the difference between the prior art and the claims. Without a determination of the difference, the Examiner would be unable to draw a conclusion of obviousness based on a non-established difference. Failing to follow the requirements of the law, the Examiner latched onto an erroneous legal rationale that claims are obvious where they recite steps, which were individually known in the prior art. Having latched onto this rationale, the Examiner failed to consider rebuttal evidence showing unexpected results, which Appellants submitted in an attempt to expedite the prosecution in this case. Appellants discuss more fully hereunder the issues presented by this case.

Answer to Issue 1

The Examiner erred in failing to make a finding as to the difference between the prior art and the claims. Failure to make such a finding should occasion reversal of the Examiner. For, one would be hard pressed to draw a conclusion of obviousness, if one does not know the difference between the prior art and the claims.

Appellants hasten to note that in determining the difference between prior art and the claims, the inquiry is not whether the differences themselves would have been obvious. The inquiry should be into whether the claimed invention as a whole would have been obvious, Stratoflex, Inc. v. Aeroquip Corp., 218 USPQ 871 (Fed Cir. 1983). In this case, not only did the Examiner fail to make a factual finding as to differences, Mo-5663

he failed to establish obviousness of claimed invention as a whole over the prior art. Appellants, therefore, pray for the reversal of the Examiner.

Answer to Issue 2

The Examiner erred in concluding that the claims are obvious merely because the claims allegedly recite a compilation of generally known steps. It is well established that identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention, In re Kotzab, 55 USPQ 1313 (Fed. Cir. 2000). In this case, the Examiner advanced no factual basis supporting the allegation that compilation of generally known steps would lead to the preparation of monodispersed, gel-like ion exchangers. It seems that the Examiner is basing the allegation on his personal knowledge of what is known in the art. It is well established that where the rejection is based on facts within the personal knowledge of the Examiner, the facts or data should be stated as specifically as possible. In this case, the Examiner has not stated any support for the allegation of the generally known steps for the preparation of monodispersed, gel-like ion exchangers, In re Lee 61 USPQ2d 1430 (CAFC 2000). In effect, the Examiner's conclusion of obviousness based on the assertion that the compilation of individually known steps would have led to the claims is factually and legally unsupported. Appellants, therefore, pray for the reversal of the Examiner.

Answer to Issue 3

The Examiner erred in failing to properly consider Appellants' rebuttal evidence showing unexpected results of monodisperse polymers over referenced heterodisperse polymers on the grounds of alleged general knowledge that "monodisperse anion exchange resins afford advantages over heterodisperse resins in the way of enhanced physical properties and economics".

Appellants have made a showing of unobviousness by comparing physical properties such as capacity (mol/l), conductivity (l-ls) pressure loss of the ion exchangers according to the captioned invention. Also, Appellants prepared comparison test data showing superior results of the ion exchanger according to the captioned invention in a fouling test (with calcium ligningsulfonate) to simulate an industrial process, for example, the use of ion exchangers in the paper manufacturing industry. It is worth noting that the fact that an ion exchanger is monodisperse does not necessarily mean that it would possess all physical properties, let alone superior properties meeting the requirements of its service conditions. Distinctly, the claimed process results in monodisperse ion exchangers, which have superior properties that rebut any presumption of obviousness.

Yet, the Examiner seemingly discounted or entirely dismissed the rebuttal evidence over an erroneous rationale that the unexpected results constitute advantages that flow from the suggestion of the prior art. More specifically, the Examiner discounted or dismissed the rebuttal evidence on the unsupported grounds that monodisperse anion exchange resins afford advantages over heterodisperse resins. If this were the case, the art would discontinue to use heterodisperse resins. Such is not the case.

It is well established that in the determination of obviousness, the Examiner must consider all the evidence, and should not be influenced by any earlier conclusions. More pertinently, once Appellants have presented rebuttal evidence, Office personnel should reconsider any initial obviousness determination in view of the entire record In re Piasecki 223 USPQ at 778.

While it is correct to generally state that recognition of another advantage which flows naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious, such is not the case here. The Examiner in this case has not shown how the advantages of monodisperse

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resins flow from the heterodisperse resins. As such, the Examiner's rationale for discounting or dismissing the rebuttal evidence is without support. Appellants, therefore, pray for the reversal of the Examiner.

Conclusion

While the foregoing arguments would suffice for the reversal of the Examiner, Appellants now briefly discuss and distinguish the prior art. The claims stand rejected over US 4,444,961, Timm (hereinafter Timm), US 4,952,608, Klipper et al (hereinafter Klipper), US 3,006,866, Corte et al (hereinafter Corte '866).

The closest these references come to the claims is in Timm's disclosure of the manufacture of spheroidal polymer beads having uniform size (monodisperse ion exchangers). The other cited references teach the manufacture and functionalization of heterodisperse ion exchangers. Nothing in the prior art teaches or suggests the claims. The references are discussed and distinguished more fully hereunder for the proposition for which they are cited.

Timm is cited for the proposition that it teaches instant step (a), viz. the method for a monodispersed crosslinked vinyl base polymer.

Klipper is cited for the proposition that it "teaches amidomethylation and conversion to an aminomethylated bead polymer of instant steps (b) and (c) including the instant embodiments of phthalimide ether and sulfuric acid catalysis (column 1, lines 27-54)".

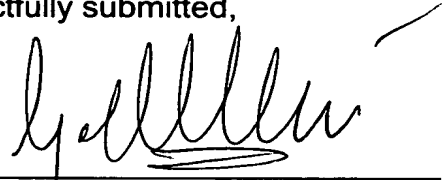
Corte '866 is cited for the proposition that it "teaches introducing aminoalkyl groups via chloromethyl phthalimide and subsequent alkylation to form weak or strong anion exchangers, i.e., instant step (d) [paragraph bridging columns 1 and 2; column 3, lines 43 – column 4, line 2]".

The record is devoid of a basis in the references, which would have led the skilled artisan to combine the individual steps of the prior art to the claims with a reasonable expectation of success. Therefore, the references do not support a prima facie case of obviousness.

Net: Given the Examiner's errors as discussed above, Appellants pray for the reversal of the Examiner.

Respectfully submitted,

By



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APPENDIX - CLAIMS ON APPEAL

1. A process for preparing monodisperse anion exchangers comprising
 - (a) reacting monomer droplets made from at least one monovinylaromatic compound and at least one polyvinylaromatic compound to give a monodisperse, crosslinked bead polymer,
 - (b) amidomethylating the monodisperse, crosslinked bead polymer from step (a) with phthalimide or methylphthalimide,
 - (c) converting the amidomethylated bead polymer from step (b) to an aminomethylated bead polymer, and
 - (d) alkylating the aminomethylated bead polymer from step (c).
2. A process according to Claim 1 wherein the monomer droplets are microencapsulated using a complex coacervate.
3. A process according to Claim 1 wherein step (a) is carried out in the presence of a protective colloid.
4. A process according to Claim 1 wherein step (a) is carried out in the presence of at least one initiator.
5. A process according to Claim 1 wherein the monomer droplets comprise porogens that, after the polymerization, form macroporous, crosslinked bead polymers.
6. A process according to Claim 1 wherein a polymerization inhibitor is used in step (a).
7. A process according to Claim 3 wherein the protective colloids are gelatin, starch, polyvinyl alcohol, polyvinylpyrrolidone, polyacrylic acid, polymethacrylic acid, copolymers made from (meth)acrylic acid or (meth)acrylate, or mixtures thereof.
8. A process according to Claim 1 wherein the monovinylaromatic compounds are monoethylenically unsaturated compounds.
9. A process according to Claim 1 wherein the polyvinylaromatic compounds are divinylbenzene, divinyltoluene, trivinylbenzene, divinylnaphthalene, trivinylnaphthalene, 1,7-octadiene, 1,5-hexadiene, ethylene glycol dimethacrylate, trimethylolpropane trimethacrylate, allyl methacrylate, or mixtures thereof.

10. A process according to Claim 1 wherein the initiator is a peroxy compound or an azo compound.

11. A process according to Claim 10 wherein the initiator is dibenzoyl peroxide, dilauroyl peroxide, bis-(p-chlorobenzoyl) peroxide, dicyclohexyl peroxydicarbonate, tert-butyl peroctoate, tert-butyl peroxy-2-ethyl-hexanoate, 2,5-bis-(2-ethylhexanoylperoxy)-2,5-dimethylhexane, or tert-amylperoxy-2-ethylhexane,

12. A process according to Claim 10 wherein the initiator is 2,2'-azobis(isobutyronitrile) or 2,2'-azobis-(2-methylisobutyronitrile).

13. A process according to Claim 1 wherein a phthalimido ether is formed in step (b).

14. A process according to Claim 13 wherein the phthalimido ether is prepared from phthalimide or methylphthalimide and formalin.

15. A process according to Claim 13 wherein the reaction of the phthalimido ether with the bead polymer takes place in the presence of oleum, sulfuric acid, or sulfur trioxide.